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Neighborhood Change from the Bottom Up:

What are the Determinants of Social Distance between New and Prior Residents?

Abstract

An important source of neighborhood change occurs when there is a turnover in the housing unit due to residential mobility and the new residents differ from the prior residents based on socio-demographic characteristics (what we term social distance). Nonetheless, research has typically not asked which characteristics explain transitions with higher social distance based on a number of demographic dimensions. We explore this question using American Housing Survey data from 1985 to 2007, and focus on instances in which the prior household moved out and is replaced by a new household. We focus on three key characteristics for explaining this social distance: the type of housing unit, the age of the housing unit, and the length of residence of the exiting household. We find that transitions in the oldest housing units and for the longest tenured residents result in the greatest amount of social distance between new and prior residents, implying that these transitions are particularly important for fostering neighborhood socio-demographic change. The results imply micro-mechanisms at the household level that might help explain net change at the neighborhood level.

Keywords: neighborhoods; demographic change; housing unit transition; social distance.

Bio

John R. Hipp is a Professor in the departments of Criminology, Law and Society, and Sociology, at the University of California Irvine. He is the director of the Metropolitan Futures Initiative (MFI). His research interests focus on how neighborhoods change over time, how that change both affects and is affected by neighborhood crime, and the role networks and institutions play in that change. He approaches these questions using quantitative methods as well as social network analysis. He has published substantive work in such journals as *American Sociological Review, Criminology, Social Forces, Social Problems, Mobilization, City & Community, Urban Studies* and *Journal of Urban Affairs*. He has published methodological work in such journals as *Sociological Methodology, Psychological Methods,* and *Structural Equation Modeling*.

Neighborhood Change from the Bottom Up:

What are the Determinants of Social Distance between New and Prior Residents?

There is a longstanding interest in the extent to which the socio-demographic composition of neighborhoods changes, and the reasons for that change. This demographic change is of interest as demographic characteristics of neighborhoods have been shown to have various social consequences, including impacting levels of crime, disorder, cohesiveness and attachment, various health outcomes, or home values due to desirability of the neighborhood (Odgers, Caspi, Bates, Sampson, and Moffitt 2012; Sampson, Morenoff, and Gannon-Rowley 2002; Sharkey and Faber 2014). Given the importance of the socio-demographic characteristics of neighborhoods, there is naturally interest in understanding how net change in demographic characteristics occurs in neighborhoods. As a consequence, scholars have studied how neighborhoods change based on racial/ethnic composition (Clark 1993; Freeman and Rohe 2000; Price-Spratlen and Guest 2002), socio-economic status (SES) (Brueckner 1977; Ellen and O'Regan 2008; Galster, Quercia, Corte, and Malega 2003; Vigdor 2002), the age structure of residents (Chevan 1982), or home values (Hipp and Singh 2014; Kim 2000).

A common feature of this research is using neighborhoods as the unit of analysis, and then assessing how different the composition of the neighborhood is from time 1 to time 2. Thus, these studies typically measure *net* change. However, neighborhood change occurs at the household-level through two possible processes: 1) changing characteristics of the residents in the neighborhood; 2) turnover in the housing unit in which residents leave or die and are replaced by new residents who may differ along certain key socio-demographic characteristics. Although changes for the existing residents capture some of this change, there is evidence that residential

turnover accounts for the majority of change in neighborhoods (Coulton, Theodos, and Turner 2012). Nonetheless, neighborhood-level studies only capture net change, and it is only a smaller set of studies that have focused on housing unit transitions as a way to understand neighborhood change (e.g., Ellen 2000; Hipp 2012; Spain 1980). Therefore, to truly understand how and why change occurs in neighborhoods, it is necessary to focus on these housing unit level turnovers, as studies focused at the neighborhood level run the risk of committing the ecological fallacy when attempting to assess the explanations of net change that have occurred. Furthermore, these housing unit transitions may not simply sum up to net neighborhood change, but may instead exhibit various nonlinearities in their consequences for net neighborhood change. This implies the possible need for a simulation approach to understanding neighborhood change (Bruch 2014; Bruch and Mare 2012), and the results of the present study are informative for such a project.

We therefore contribute to this small body of literature and study neighborhood change as it occurs at level of the housing unit when residential turnover occurs. We build on the insights of the residential mobility literature in that for such neighborhood change to occur two features are required: 1) the current residents die or choose to leave the unit; 2) the new residents are different from the prior residents in some fashion. If #2 is not the case—that is, the new residents are very similar to the prior residents based on various socio-demographic characteristics—then this turnover will not result in neighborhood demographic change. These micro-transitions in which the new residents differ from the prior residents are therefore important for understanding neighborhood change, and we are particularly interested in focusing on what characteristics of the housing unit or the prior residents are associated with residential turnover that results in the largest differences between the prior residents and the new residents.

Social distance of residential turnover

We refer to the amount of difference between prior and new residents based on various socio-demographic characteristics as *social distance* (Bogardus 1947; Merton 1968; Poole 1927). Whereas existing studies of housing unit transitions often focus solely on racial/ethnic transitions (Ellen 2000; Rosenbaum and Argeros 2005), we study the social distance between the new and the prior residents along several dimensions: age, household income, education, ownership status, and race/ethnicity. Understanding the change in these socio-demographic characteristics is of interest given that they are often important for understanding how the neighborhood context is related to consequences such as crime. For example, higher levels of SES (education or income) are related to lower levels of neighborhood crime (Hipp 2007b; Krivo and Peterson 1996), as are higher levels of homeownership (Hipp and Yates 2011; Krivo and Peterson 1996; Smith, Frazee, and Davison 2000). And the presence of more in the highest crime offending age (aged 16 to 29) in the neighborhood is associated with higher crime rates (Crutchfield 1989). Furthermore, racial composition is related to levels of crime or disorder (Krivo and Peterson 1996; McNulty 2001) as is the presence of younger adults and adolescents (Bellair 1997; Crutchfield 1989). Whereas much of the existing literature on housing unit turnover implicitly focuses on stasis—that is, to what extent do residents of the same race/ethnicity move into a unit—we are interested in what characteristics might bring about social distance between new and prior residents.

We focus on four key dimensions that may be important for bringing about this social distance. First, following filtering theory (Hoyt 1933) we ask whether the age of the housing unit changes the level of social distance for new residents. Second, given that housing structures have relatively permanent characteristics that can affect the types of households willing to live in them, we ask whether different types of housing (attached vs. detached single family units,

mobile homes, or apartment complexes of varying sizes) result in more or less social distance of new residents. Third, given the importance of residential stability for neighborhoods (Boessen and Hipp 2015; McNulty 2001; Sampson and Groves 1989; Warner and Pierce 1993), we explore whether there are particularly large social distance differences when long-term residents exit a unit. Fourth, given the importance of crime and disorder for neighborhood change (Hipp 2010a; Hipp 2016; Skogan 1990; Steenbeek and Hipp 2011), we focus on whether perceived crime and disorder impact social distance between new and prior residents. We use the American Housing Survey (AHS) metropolitan samples from 1985 to 2007 to explore these questions using housing unit data that captures transitions when one household moves out and is replaced by another.

Neighborhood change and housing unit transitions

Neighborhood-level studies

Research focusing on socio-demographic change in neighborhoods typically studies data aggregated to "neighborhood" units. Although there is debate about the proper geographic unit that defines neighborhoods (Hipp 2007a; Hipp and Boessen 2013; Spielman and Logan 2013; Taylor 2012), scholars studying change most often use census definitions, such as census tracts, given that the boundaries are relatively straightforward to harmonize over time. Many of these studies have focused on racial/ethnic change, often focusing on the "white flight" that was observed during the 1960s-90s (Clark 1993; Freeman and Rohe 2000; Price-Spratlen and Guest 2002), or whether such change inevitably led to a complete transition from one group to another in the neighborhood (Lee and Wood 1991; Wood and Lee 1991). Bader and Warkentien (2016) focused on the long-term change in racial composition of neighborhoods over multiple decades. There is also interest in how the SES of neighborhoods changes over time (Ellen and O'Regan

2008; Galster, Quercia, Corte, and Malega 2003; Vigdor 2002). This research, particularly more recently, has focused on neighborhood improvement that is sometimes referred to as gentrification (Brown-Saracino 2017; Glass 1964; Vigdor 2002). Much of this research is interested in how gentrification is related to changing levels of crime in neighborhoods (Barton and Gruner 2015; Kreager, Lyons, and Hays 2011; Papachristos, Smith, Scherer, and Fugiero 2011) and the surrounding area (Boggess and Hipp 2016), whereas other scholars have focused on how gentrification is related to neighborhood racial change (Hwang and Sampson 2014). Fewer studies have focused on changes in the age structure in neighborhoods (Chevan 1982). In general, these neighborhood-level studies are capturing net change in various socio-demographic characteristics.

A theory of neighborhood change

Neighborhoods can change due to two different processes: either the current residents experience changes, or else there is residential mobility in which new residents replace the prior ones and differ based on certain demographic characteristics (Moore 1978). There are various examples of neighborhood change that can occur if the current residents experience change. For example, residents who lose their job will result in increased unemployment, whereas those who obtain jobs will reduce it. Those who get job promotions will increase the average level of income. As children are born, this will change the number of persons as well as the percentage of children in the neighborhood. And as children age and leave the house the opposite pattern will occur. One particular certainty is that residents who do not move will become older with each passing year, and their length of residence in the neighborhood (a measure of residential stability) will monotonically increase as well. Indeed, there is much insight that can be gained by utilizing the housing demography approach to capture the lifecycle of residents who do not

move (Myers 1999). The housing demography approach takes into account the aging of households and views residents as a cohort over time—rather than simply viewing a cross-sectional snapshot of neighborhood characteristics—and demonstrates the key insights that can be obtained by the simple insight that aging is a constant process.

Nonetheless, much neighborhood change occurs due to housing unit turnover (Coulton, Theodos, and Turner 2012) . For example, racial/ethnic change can generally only occur with residential turnover. There is evidence that more neighborhood change occurs due to residential turnover compared to within-household changes (Coulton, Theodos, and Turner 2012). For this reason, studies have focused on the determinants of residential mobility, given that this is likely necessary for considerable change in neighborhoods.

Positing that neighborhood change occurs due to residential mobility highlights that there are two pieces to this process. First is the question of the differential likelihood of households to move. A large body of literature has focused on this question (Deane 1990; Kull, Coley, and Lynch 2015; South and Crowder 1997; South and Deane 1993; van Ham and Clark 2009), and the insights are important as there, of course, can be no change through residential mobility if the household does not leave. Second is the question of the characteristics of the new household if residential mobility does occur. This raises the idea of possible social distance between the new and the prior residents, and is the focus of the present study. If there are few differences between the new and the prior residents based on various socio-demographic characteristics, then little change will occur for the neighborhood despite the residential turnover. Although there are various definitions of "social distance" as the idea traces back to sociologists in the early twentieth century (Bogardus 1947; Poole 1927), here we invoke Robert Merton's (1968) notion that social distance is based on the social statuses that individuals occupy. Our approach focuses

on both the residents entering and leaving the unit, which differs from studies looking at mobility away from neighborhoods, in which one must assume, for example, that white households leaving minority neighborhoods are replaced by non-white new residents, given that this is not explicitly measured (Crowder and South 2008; South and Crowder 1998a; South and Crowder 1998b).

We propose that these two dimensions of residential mobility and social distance underlie a theory of neighborhood change based on household decisions. Specifically, to understand the potential for neighborhood change based on various demographic characteristics it is necessary to combine information on: 1) the relative likelihood of households in a neighborhood to actually move; and 2) the relative possibility of social distance occurring when the household in fact moves. A household level theory on neighborhood change could therefore use a simulation approach to build a model of the potential of neighborhood change based on various characteristics (Bruch 2014; Bruch and Mare 2012). Such an approach would combine the empirical results obtained from the current study with the insights from the large body of research on residential mobility to build a household-level model that could make predictions about neighborhood change. Because the results of such a household level simulation would not necessarily linearly sum to net neighborhood change, the insights of this study are a necessary first step towards such an agenda. Furthermore, because we are interested in neighborhood change, our focus is on how the new residents differ from the residents they replace—which is a direct measure of micro-change—rather than asking how they differ from the other remaining residents in the neighborhood. This latter question is an interesting, but different, one that focuses more on the psychology of the in-movers and their decision on location based on the existing composition.

Social distance in housing unit turnover

Although housing turnover instances in which the new and prior residents differ along many different social dimensions are prime examples of social distance, scholars have most frequently focused only on racial/ethnic transition. These studies typically focus on housing units over time, and assess the relationship between the race/ethnicity of the prior residents and the new residents moving into a unit. For example, one study using the American Housing Survey (AHS) metropolitan sample found that when a white household moved out of a unit, only about 11 percent of the time were they replaced by a non-white household (Ellen 2000). In the same study, when a Black household moved out, only 24 percent of the time were they replaced by a household of a different race/ethnicity (Ellen 2000). Other research focused on transitions in which the new and prior households differed by race and found that although the number of transitions from black to white occupancy doubled from the late 1960s to mid-1970s in central cities, the white residents who were moving into the central city had higher income and educational levels than the black residents they replaced (Spain 1980). There was also evidence that the housing tenure of residents was important, as a study using the Annual Housing Survey in the 1970s found that black to white transition was more likely when the prior residents were renters than when they were owners (Marullo 1985).

A predominant feature of these existing studies on the race of new households in housing turnover is that they often primarily focus on whether the race/ethnicity of the prior household (or neighborhood) is related to the race/ethnicity of the new residents. Thus, the focus is primarily on stasis: that is, to what extent is there a lack of racial/ethnic change, and often invoking the tipping hypothesis of neighborhood racial change. For example, studies have looked at how the racial composition of the neighborhood impacts the race/ethnicity turnover at the

housing unit, as one study demonstrated the importance of the racial/ethnic composition of the area based on surrounding areas with at least 100,000 population (Rosenbaum and Argeros 2005), and others have shown that the racial composition of the micro-neighborhood is related to turnover by race/ethnicity (Friedman 2011; Hipp 2012). These studies typically are not concerned with other household or housing unit characteristics that might also be related to such transitions, or measuring how discrimination might push Black households into predominantly black neighborhoods (South and Crowder 1998a; South and Crowder 1998b).

Despite the predominant focus on racial/ethnic transition, other transitions are important as well for neighborhood change. One of particular interest in recent years is transition in the SES of residents. That is, how different are the new and prior residents based on income or education? Only limited research has looked at this type of change at the housing unit level. There is evidence that household and neighborhood factors impact a housing unit's transition from a household in poverty to one not in poverty (Theodos, Coulton, and Pitingolo 2015). A study of mobility found that whereas high income owners are least likely to move, high income renters are the most likely to move (van Ham and Clark 2009). In poor neighborhoods in New York there was greater in-movement of poor households, greater out-movement of non-poor households, and downward shifts in income levels among long-term residents (and the opposite patterns in low-poverty neighborhoods) (Rosenbaum 1995). However, other research in New York City in the 1990s found no evidence that low income residents were more likely to move out when a neighborhood was experiencing in-movement of higher income residents, in fact, turnover among lower income households was lower in such circumstances (Freeman and Braconi 2004). It seems that although high income households are more likely to enter gentrifying neighborhoods, existing residents also can experience income gains (Ellen and

O'Regan 2011). Focusing on in-movement rather than out-mobility, one study found that the higher-income households who are more likely to move into lower income neighborhoods are those who place less emphasis on amenities (Ellen, Horn, and O'Regan 2013). However, there is less evidence regarding housing unit transitions between owner and renter status; research on elderly households found that recent updates in the unit increased the chances of owner occupancy by the new residents (Aurand and Reynolds 2013).

The transition at the housing unit level based on renter/owner status or age is less studied, but nevertheless important. An increase in owners is important as homeowners typically express more attachment to the neighborhood (Lee, Campbell, and Miller 1991; Mesch and Manor 1998), which can lead to more collective efficacy. Likewise, homeowners are more likely to participate in voluntary organizations, which can also help neighborhoods address challenges (Oliver 1984; Swaroop and Morenoff 2006). As a consequence, the presence of more homeowners in a neighborhood is associated with lower crime rates (Hipp and Yates 2011; Krivo and Peterson 1996; Smith, Frazee, and Davison 2000). The age structure is also important, as research in on the age/crime curve has consistently shown that the likelihood of offending is highest in late adolescence, and then declines over time (Nagin and Land 1993; Sampson and Laub 1992). As a consequence, we would expect neighborhoods with more males in this age range to experience more crime, and there is evidence consistent with this (Bellair 1997; Crutchfield 1989).

What are the determinants of social distance during residential turnover?

Although we argue that understanding which characteristics of households, housing units, and neighborhoods are important for impacting differences along a number of social dimensions between the new and prior residents, few studies have explored such differences (outside of

racial/ethnic change). Our focus on neighborhood change from the bottom-up by focusing on household-level transitions can be informative for neighborhood change, particularly if these housing unit transitions do not simply linearly sum up to net neighborhood change. Given the lack of research on this topic, and the many possible dimensions that might be important, we narrow our focus to four key dimensions to maintain scope of the present study. We focus on four characteristics in particular that we posit have a higher likelihood of resulting in social distance between the new and prior residents when a transition occurs: 1) housing age; 2) housing type; 3) residents' length of residence; 4) neighborhood crime and social disorder.

The first important characteristic we focus on is the age of housing, as filtering theory from the housing economics field (Baer and Williamson 1988; Lowry 1960) posits that as housing ages it slowly begins to deteriorate and therefore loses some of its value. In this theory, housing slowly deteriorates and requires constant upkeep. As the aging housing loses desirability, lower income residents are likely to replace the current residents. If these new residents have less ability to provide upkeep, the deterioration of the units can accelerate. Studies have shown that this process plays out slowly over a long period of time (Hoyt 1933; Rosenthal 2008), but nonetheless older housing units tend to experience turnover in which residents are replaced by those of modestly lower income (Rosenthal 2014). As further evidence of this deterioration, a recent study showed that street segments with older housing had higher levels of crime, which is consistent with this deterioration leading to disorder, which is posited to increase crime (Hipp, Kim, and Kane 2019). The implication is that transitions occurring when households move out of an older housing unit will have greater potential for inducing social distance, and therefore are important to study for understanding neighborhood change. A consequence is that household turnover in older housing units will result in greater social

distance between the new and the prior residents compared to turnover in newer housing units. It is possible that this slow decline will be interrupted by an abrupt shift at some point in the future when higher income residents move in and renovate the unit—a process referred to as gentrification (Ellen and O'Regan 2011; Freeman 2005; Glass 1964). This would also be expected to result in more social distance between the prior and new residents, but in a higher SES direction.

A second important dimension to focus on is the type of housing in an area. Housing characteristics are relatively permanent once built—as land use change tends to occur rarely—and may impact residential mobility decisions as well as limiting the types of people who are willing to live in a particular structure. For example, we would expect there to be differences in the turnover process between single-family and multi-family housing, as single family units are possibly perceived as "homesteads" in which a household wishes to put down roots (even if they are renting) compared to multifamily units. Furthermore, within each of these categories, we would expect there to be differences in the turnover process. In part, this is because these various types of housing units attract different types of residents, in general. For example, Table 1 displays the summary statistics of the existing residents for some key demographic variables across the housing units in the waves of the American Housing Survey averaged from 1973 to 2004 that we use in our analyses.[1] On the one hand, logged household income is highest in detached single family units, on average, next highest in attached single family units, but is at a relatively similar lower level in all multi-family units. On the other hand, the level of education of residents is highest in single-family units, is much lower in multi-family units in complexes with less than 10 units, but is nearly equally high in multi-family units that are part of complexes

[1] We use the complete sample of households at each time point, rather than simply focusing on households that moved (which is the sample of the analyses). Our goal here is to describe the type of households in these units at any particular point in time, which we obtain from this random sample aggregated across all time points.

with 10-50 units. It is also notable that very large complexes (more than 50 units) appear to have considerable variability in SES levels compared to the other types of units (given the larger standard deviations) implying that there is more heterogeneity in the characteristics across large complexes. These very large complexes have much less perceived social disorder nearby compared to other housing types, whereas small complexes have more crime and disorder which indicates that they are qualitatively different from multi-family units in larger complexes. Units in larger complexes also tend to have much older residents, and smaller households, compared to other types of multi-family units.

<<<Table 1 about here>>>

The fact that these various housing types tend to attract different types of households implies that they might differ in how much social distance occurs during housing unit transitions. For example, given that multi-family units in large complexes tend to be older, on average, we might expect less social distance based on age for such residential transitions. Likewise, mobile homes appear to attract a narrower cross-section of persons as they exhibit low variability in income and education levels, and a high percentage of white residents, and therefore we would expect them to experience less social distance during transitions. In contrast, small complexes or duplexes have high turnover, high perceived crime and social disorder and if they do not attract a specific type of clientele they would have the potential for greater social distance during transitions.

A third important feature that can impact the social distance between new and prior residents is how long the prior residents have lived in the unit. There is an irony to this possibility as, on the one hand, longer-term residents typically have larger neighborhood networks (Sampson 1988; Sampson 1991; Swaroop and Morenoff 2006), report greater

attachment to the neighborhood (Kasarda and Janowitz 1974; Sampson 1988), and perceived cohesion (Wickes, Hipp, Sargeant, and Homel 2013), and are less likely to move (Crowder 2001). On the one hand, this attachment may subtly affect who they are willing to sell to, and could result in a desire for more homophily with the new residents and hence less social distance. For example, there is evidence of a housing unit effect in which existing residents are more likely to be replaced by households of the same race, even when controlling for the racial composition of the micro-neighborhood and neighborhood, which could imply choice on the part of either the buyer or seller (Hipp 2012). On the other hand, households that have lived in the neighborhood a long time have likely observed more change in the neighborhood during that time. As a consequence, there is evidence that longer-term residents perceive more crime and disorder in the neighborhood (Hipp 2010b), and report less satisfaction with the neighborhood (Hipp 2009), compared to others living in the same neighborhood. Furthermore, once they have decided to move out, these longer-term residents may have seen many of their former neighbors move out and therefore feel less concern with the future of the neighborhood, that is, a sense that the neighborhood has experienced a cultural change and therefore is no longer "theirs" (Cummings 1998). For this reason, they may be less concerned about selling their unit to someone similar based on social distance, and therefore such transitions might be characterized by greater social distance.

Finally, there is evidence that crime or disorder in a neighborhood can impact neighborhood demographic change (Hipp 2016; Steenbeek and Hipp 2011) and socio-economic change (Hipp 2010a; Hipp and Wickes 2016). This plays out at the household level as there is evidence that crime increases the desire to leave a neighborhood and mobility out of the neighborhood (Xie and McDowall 2008), and may therefore spur neighborhood change. This

desire to move is not surprising as crime and disorder are undesirable characteristics of a neighborhood. However, the question is why would households be willing to move *into* higher crime neighborhoods, and one argument is that lower income households have less economic ability to avoid such neighborhoods (Hipp, Tita, and Greenbaum 2009). This implies that crime or disorder might increase the social distance on income of the new residents compared to the prior residents. Relatedly, given the evidence of limited options in the housing market for racial/ethnic minorities (Crowder and South 2005), another perspective is that these limited options will increase the likelihood that racial/ethnic minorities are "pushed" into high crime and disorder neighborhoods (Boggess 2017; Hipp 2010a; Hipp 2011). Indeed, a study showed that crime victimization and nearby crime incidents increase the likelihood that a housing unit will transition from a white household to a minority race household (Xie and McDowall 2010). A study of housing units in neighborhoods in a large number of cities found that neighborhoods with higher violent crime rates were more likely to experience in-movement of minorities and out-movement of white residents (Hipp 2011). Another study found a similar pattern when zeroing in on the level of perceived crime in the micro-neighborhood (Hipp 2010c). Despite this evidence about the effect of crime on disproportionate mobility in or out of housing units based on the race/ethnicity of households, there is less evidence regarding how such differential mobility may be related to other characteristics, such as by income or education level of households, or owner/renter status. We explore this question here.

Data and Methods

Data

We use data from the American Housing Survey (AHS) metropolitan samples. The AHS has been conducted annually or bi-annually by the U.S. Census Bureau for the U.S. Department of Housing since 1973 as an in-person survey. The survey is unique in that it follows *housing units* over time, the sample is drawn from the universe of residential housing units in the metropolitan areas at the time of the survey, and thus the households living in these housing units are the units of analysis for this study; a housing unit will appear each time that the existing residents move out. There is therefore not sample attrition. The current residents of the unit are surveyed, and the response rate tends to be relatively high: for example, in 2004 the response rates across these large metropolitan areas ranged from 89% to 94%.[2] The AHS provides data over a long period of time: the sample was collected annually in earlier years, and approximately every other year after that. Not all metropolitan areas are surveyed each wave, and therefore a housing unit in a metropolitan area is typically surveyed every four years. This allows comparing the characteristics of new and prior residents in the case of turnover during those four years (Hadden and Leger 1995). We use data for years in which we have information on the current residents and the prior residents, which is annual from 1985-91, 1994-96, and then the years 1998, 2002, 2004, and 2007. In each wave we are able to match the housing unit to the prior wave, and our sample focuses on cases in which there are new residents at the second time point. There are 114,424 housing units in the study period in which a change of households occurred at the next time point and there are no missing values for any variables (the N over models varies given missing data on the outcome variable).

[2] https://www2.census.gov/programs-surveys/ahs/2004/2004%20AHS%20Metropolitan%20Sample%20Design%20and%20Weighting.pdf

Dependent Variables

We are interested in comparing the characteristics of the new and the prior residents when a transition occurs in the dwelling unit. We constructed a set of dependent variables that captured the absolute value of difference between the new and prior residents, which we term *social distance*. Thus, we constructed the *social distance in age*, which is the absolute value of the difference in the age of the household head between the new and prior residents. Whereas the social distance measures capture the degree of raw change, we also constructed measures that captured the direction of the change. Thus, the *social distance* measures simply capture how much difference there is between the prior and new residents, whereas the *difference* measures assess whether that change is systematically in the direction of certain types of new households. We thus constructed a measure of *difference in age*, by subtracting the age of the prior household head from that of the new head, allowing us to assess if the new household head is older or younger than the prior one. We constructed three socio-economic status measures: *social distance in household income (logged), social distance in education* of household head (based on years of education), and *social distance of owners* (a 0/1 measure capturing whether the new and prior residents are different on owner status (1) or the same (0)). We constructed analogous *difference* variables of the income and education measures. The owner difference measure has values of -1 if the household transitioned from owner to renter, +1 if it transitioned from renter to owner, and 0 otherwise. To view change in race/ethnicity, we constructed a measure of social distance of race/ethnicity, which has a value of 1 if the new residents are of a different race/ethnicity from the prior residents, and otherwise has a value of zero. We also created four measures of: *new residents are white, new residents are black, new residents are Latino*, and *new residents are Asian*.

Independent variables

Our first set of independent variables captured characteristics of the housing unit. We created measures of the type of housing unit, which were indicator variables with a value of 1 if the unit is: 1) attached single family unit; 2) duplex; 3) 3-4 units; 4) 5-9 units; 5) 10-19 units; 6) 20-49 units; 7) 50+ units; 8) a mobile home. The reference category is a detached single family unit. We also measure the age of the housing unit, as filtering theory posits this will have important consequences, as a series of 0/1 indicator variables: 1) 3-5 years old; 2) 6-10 years old; 3) 11-20 years old; 4) 21-30 years old; 5) 31-40 years old; 6) 41 or more years old. The reference category is less than 3 years old.

We measured various characteristics of the prior household residents. We measure the length of residence based on several categories: 1) 2-5 years; 2) 6-10 years; 3) 11-20 years; 4) 21-30 years; 5) 31 or more years. The reference category is less than 2 years. We included measures of *age* and *age squared* (to capture nonlinearity) of the household head. We test for nonlinearity given the possibility that the degree of change in new residents (particularly based on age) may be largest when the oldest or youngest household heads move out. We measure race/ethnicity based on the household head with 0/1 measures of *Black*, *Latino*, or *Asian* (with white and other race as the reference category). We measure *household income (logged)* and a squared version to capture nonlinearity, as there is the possibility that households at the extremes of the income distribution (either high or low) may experience greater levels of social distance during transitions. We measured the years of *education* of the household head and a squared version to capture possible nonlinearity in how education level is related to the characteristics of the new residents. We include *owner*, an indicator if the household owns the unit. We include *number of persons* in the household.

Social distance of residential turnover

Finally, we included two measures of the neighborhood, based on the respondent's assessment. We include a measure of social disorder, which is a 0/1 measure of whether the respondent believes "people in the neighborhood are bothersome." We include three measures of perceived crime, as the AHS asks a series of three 0/1 questions: is crime a problem, is it so much of a problem that it's a bother, and is it such a bother that the respondent wishes to move.

The summary statistics for the variables used in the analyses are presented in Table 2, and column A captures housing units in which a residential turnover occurred (our analytic sample). The mean for the social distance of age variable is 13.8, indicating that when a household turns over, the absolute difference in age between the new and prior residents is 13.8 years, on average. The mean for the difference in age variable of -2.9, indicates that when a household turns over, the age of the new residents is 2.9 years less than that of the prior residents, on average. For a residential transition, there is 2.4 years difference in education, on average, as the new residents have 0.2 more years of education, on average. Of residential transitions, about 29% of the time the new residents will be of a different race/ethnicity (social distance of race). The new residents are white 65% of the time, Black 15% of the time, Latino 13% of the time, and Asian 6% of the time. Among the independent variables, we see that when transitions occur the prior resident is an owner 37.4% of the time: given that the percent of units that are homeowners is notably higher than this (60.9% for the total sample, column B) this highlights that more turnovers occur among renters than owners.

<<<Table 2 about here>>>

Methods

We estimated fixed effects models. Most of the models are estimated as ordinary least squares given the continuous nature of the outcome variables, with the exception of the 0/1

outcome measures that were estimated as logit models (the four measures of the race/ethnicity of the new household; social distance in race; and social distance on ownership). We included fixed effects for year of survey and metropolitan area of the sample. For example, we estimate a year and metropolitan fixed effects model for social distance of age as the outcome variable:

(1) $$y_{ij} = X_{ij}B + YR\Phi + M\Psi + \mu_{ij}$$

where y is the social distance of age for household i in year j, X_{ij} is the vector of individual-level measures, B is a vector of the estimated parameters, YR is a vector of dummy variables for year with Φ coefficients to account for differences across waves of the survey, M is a vector of dummy variables for metropolitan areas with Ψ coefficients and μ_{ij} is an error term for household i in year j. Given that social distance of age is a continuous measure, this is estimated as an ordinary least squares model with the fixed effects. T-tests are performed to assess significance of the variables in the models, and overall goodness of fit is assessed with r-square (or the pseudo r-square in the case of the logit models). To capture nonlinearity, quadratic versions of the education, household income, and household head age variables were included in all models, regardless of statistical significance.

Results

Predicting change in age

We begin with the models predicting change in the demographic characteristics of the household based on age of household head. In the model predicting the social distance in age between the new and prior residents (Table 3, column 1) we see that there is more absolute difference in age for transitions in detached single family units (the reference category) compared to large apartment complexes and mobile homes: a turnover in a unit in a complex

with 20-49 units (b= -1.012) or a mobile home (b= -.946) has about 1 year less age difference, on average, compared to a detached unit, and a turnover in a very large complex (b= -3.808) has about 4 years less age difference. In the second model (column 2), the outcome of difference in age between the new and prior residents shows that whereas the new residents tend to be somewhat younger in smaller apartment complexes compared to detached single family units (about 0.8 years younger than the prior residents in duplexes and 3-4 unit structures, 1.5 years younger in 5-9 unit structures, and 2 years younger in 10-19 unit structures), they are much *older* (5 years older) in very large structures (50+ units) and mobile homes (3 years older).

<<<Table 3 about here>>>

Turning to the age of housing, we see that there is generally a linear positive relationship between the age of housing and the social distance in age of new residents, and column 2 shows that this social distance is due to the fact that the new residents are generally younger than the prior ones (compared to new units). In very old units (more than 40 years old), the new residents are 2.5 years younger than the prior residents, on average, compared to new units, even controlling for the other measures in the model (including the age of the prior residents).

A similar pattern is present for the length of residence, but it is considerably stronger. There is a linear positive relationship between the length of residence and the social distance in age of new residents that is quite strong, as there is a 5 year age difference, on average, for residents who have lived 21-30 years in the unit, and there is an 8 year age difference, on average, for residents who have lived more than 30 years in the unit. The second column shows that the new residents are younger than the prior ones (compared to short-term prior residents). The new residents are about 5.5 years younger, on average, for residents who have lived 21-30 years in the unit, and about 9.5 years younger, on average, for residents who have lived more

than 30 years in the unit. Note that these results are obtained even when controlling for the age of the prior residents, who typically will be older among long-term residents.

Among the demographic variables, age has a particularly strong nonlinear effect for the social distance of age. When we plotted the marginal effect of this quadratic relationship (Figure 1), we found that social distance in age is relatively low and quite flat until the age of about 50 for prior residents. Beyond this point, there is a nonlinear increase in the social distance of age, and is about 5 years larger by the time the prior residents are age 70, and about 15 years larger by the time they are 85. The relationship between age of the prior residents and the difference in age with the new residents is a slowing negative relationship. Thus, in general, as the age of prior residents increases the difference in age with the new residents is more negative; however, the slowing relationship indicates a modest tendency for similarity in age between new and prior residents (a model with the age of the new residents as the outcome, instead of the difference in age, showed a modest positive relationship between age of prior residents and age of new residents).[3]

<<<Figure 1 about here>>>

For the remaining demographic variables, there are generally modest effects. There is a u-shaped relationship between household income and the difference in age when we plotted it, as the difference in age for middle income prior residents is about 1.5 years less than low income prior residents, and about 2 years less than high income prior residents. Plotting the nonlinear accelerating negative relationship for education reveals that the social distance in age is much less when highly educated prior residents move out (about 3 years less than when very low educated residents move out). The race/ethnicity of the prior residents does not have a

[3] Of course, all other coefficients in this alternative model are identical to those presented in the text. This is because of the well-known relationship between the results of models with the measure at the second time point as the outcome variable vs. models with the change in the measure of the two time points as the outcome variable.

significant effect. However, when owners move out, there is one year less social distance in age for the new residents compared to when renters move out, and the new residents are 1.3 years older compared to new residents replacing renters. When the prior residents perceive more social disorder or crime, the new residents tend to be a bit younger (about 0.5 years younger, on average).

Predicting change in owner status

We next describe the results predicting the change in the ownership status of new residents (Table 3, columns 3 and 4). Very little change in ownership status tends to occur in apartment complexes compared to transitions in detached SFUs. However, it appears that the transitions that occur in detached SFUs are more likely to become owners than in apartments. It is also the case that older housing units are more likely to experience a change in ownership status compared to newer units, as older units are more likely to transition to renter status, controlling for the other measures in the model. Although there are few effects for length of residence, Black prior residents moving out are more likely to experience a change in ownership status compared to white prior residents, and these transitions are somewhat more likely to become rental units. When middle income residents exit a unit, ownership change is 20-25% more likely than when poor or high income residents exit (although there is no consistent pattern in whether those units become owner or rental units). Units that were owners are more likely to experience a transition then rental units, and these transitions, of course, become rentals. Finally, there is modest evidence that units in which the prior residents perceive more social disorder or crime are more likely to transition to rental units.

Predicting change in household income

Social distance of residential turnover

We next turn to explaining the change in the SES measures. In the first column of Table 4 for the model based on social distance in household income we see that there is much less difference in household income between new and prior residents in transitions in very large apartment complexes compared to a transition in a detached SFU (9% less income difference).[4] The second column predicting the difference in income shows that the relative income of new residents compared to prior residents is much lower for all units compared to detached SFUs. In smaller apartment units the difference in income between new and prior residents is about 30% less, on average, than is the change for detached SFUs, whereas in larger apartment units and mobile homes the difference is 40% less. There is also evidence that older housing units have about 3-5% more social distance in income than newer units, and about 25% lower income on average for new residents, although this effect is not as strong as for the type of housing. There is 12-25% greater social distance in income for long-term residents that move out than short-term residents, and the new residents have 9-18% higher income, on average.

<<<Table 4 about here>>>

We find that social distance in income is highest when the residents moving out have lower income (about 150% higher), compared to middle and higher income residents. And there is a strong, slowing negative relationship between the income of the prior residents and the difference in income to new residents. The slowing relationship indicates that there is a modest positive relationship between the income of the new and prior residents when using income of new residents as the outcome (rather than the difference in income). There is an accelerating positive relationship between the education level of the prior residents and the difference in income of new residents: for low levels of education, an increase in 3 years of education for the

[4] Since the outcome variable is logged income, we exponentiate the coefficients to capture percentage change. In this case, (exp(-.097) – 1)= -.093, indicates that income social distance is 9.3% lower in very large apartment structures compared to detached single family units.

prior residents results in 3-5% more change in income of new residents, but at high levels of education this 3-year increase results in about 15% more change in income. There are weaker effects in general for social distance of income based on the race/ethnicity of the prior residents, however, there is a large drop in income of the new residents when the prior residents were Black (about 30% lower). In contrast, there is a 26% increase in income for the new residents when the prior residents were an owner, controlling for the other variables in the model. Finally, we see that greater perceptions of social disorder are associated with a 6% drop in the income of the new residents, and perceiving crime as such a problem you want to move is associated with a 13% drop in income of new residents.

Predicting change in education

The results predicting the change in the education level of new residents are broadly similar to those for the household income level (Table 4, columns 3 and 4). One difference is that whereas in larger apartment complexes the new residents tend to have lower income (compared to those in detached SFU), there is minimal difference in their level of education. Another difference is that there is a very strong drop in the education level when a Latino household is replaced, and this is even stronger than the drop in income. There is a positive relationship between the income of the prior residents and the increase in education of the new residents. Finally, larger households tend to be replaced by residents with somewhat lower levels of education.

Predicting change in race/ethnicity

In Table 5 we present the results predicting racial/ethnic change during transitions. In column 1, we see that the odds of a racial/ethnic transition are 40-70% higher in apartment

complexes compared to a detached SFU, controlling for the variables in the model.[5] However, the odds of a racial/ethnic transition are 15% lower in a mobile home. In model 2, we see that these transitions in apartment units are particularly unlikely to be to white residents, as the odds are 35-40% lower in apartment units compared to detached SFUs. Instead, transitions in apartments are more likely to be to Black, Latino, or Asian residents (the odds are 30-50% higher that the new residents will be Asian in an apartment compared to a detached SFU). Again, mobile homes are different as their odds of the new residents being white or Latino are about 35% higher than for a detached SFU. However, the odds that the new residents in a mobile home will be Asian are 35% lower compared to a detached SFU, and the odds the new residents will be Black are 75% lower.

<<<Table 5 about here>>>

Turning to the age of housing, it appears that the odds of transitions in older housing resulting in racial/ethnic change are about 7% lower than in new housing. Interestingly, the odds that the new residents will be white are highest in very new (5 years or less), or very old (more than 40 years old), housing units, but notably lower for middle-aged housing. The odds that the new residents will be Black are 10-22% higher if the housing is not very new or very old, and the odds in such housing are 30-70% higher for Latinos. Asians appear particularly likely to move into housing that is 6-20 years old, and particularly unlikely to move into housing that is more than 20 years old.

Regarding length of residence, we see that racial/ethnic turnover is much more likely when long-term residents move out. When very long-term residents move out (more than 30 years in the residence) the odds of a racial/ethnic transition are 77% higher than when short-term residents move out. There is a linear negative relationship between the length of residence of the

[5] These odds ratios are computed by exponentiating the coefficients.

prior residents and the odds that the new residents will be white, controlling for the other measures in the model. In contrast, there is a positive linear relationship between length of residence of the prior residents and the odds that the new residents will be Black. Similarly, longer-term prior residents (more than 20 years in the unit) who move out are more likely to be replaced by Latino or Asian new residents compared to shorter-term residents.

For the demographic measures, we find that the odds of a racial/ethnic transition are 20-40% lower if the prior residents are retiree age as opposed to those in their 20s or 30s. Note that this effect is diminished somewhat if these older residents have also lived a long time in the unit, given the coefficients for length of residence. And whereas the odds that the new residents will be non-white are much higher if the prior residents are less than 50 years old, for older prior residents the odds that the new residents will be white increases considerably: the odds once hitting retirement age range from a 20% increase to an 80% increase. Likewise, the odds that the new residents will be white exhibits a nonlinear increasing function based on the income of the prior residents, as the odds are 60% to 200% higher for the upper tercile of incomes. Similarly, there is a strong positive relationship between the level of education of the prior residents and the probability that the new residents will be white, and a negative relationship with the probability that they will be Black or Latino. Asians are most likely to move into units in which the prior residents either had very low or very high education (a U-shaped relationship).

Consistent with prior research, there are very strong effects for race/ethnicity. Racial/ethnic transition is least likely when the prior residents were white. The odds of racial/ethnic transition is over 525% more likely if the prior residents were Asian rather than white, whereas the odds are 200% and 75% for Latinos and Blacks, respectively. Holding all else constant, the odds that the new residents will be white are reduced about 90% if the prior

residents are Black rather than white, and the odds are reduced about 75% if the prior residents are Latino or Asian. The odds that the new residents will be Black are increased nearly 11 times if the prior residents were Black rather than White. Latinos are about 270% more likely to move into a unit if the prior residents were Latino rather than White, but about 10% less likely to move into the unit if the prior residents are Black. Black residents are more likely to move into a unit if the prior residents were Asian rather than White (60% increased odds). Asian residents are 285% more likely to move into a unit if the prior residents were Asian instead of White.

Regarding the other measures, owner units have about 20% lower odds of experiencing a racial/ethnic transition compared to rental units. And whereas the odds are about 10% higher that the new residents will be White in an owner vs. a rental unit, the odds are reduced about 10% that the new residents will be Black or Latino. Finally, we see that social disorder and crime increase racial/ethnic turnover. When prior residents perceive social disorder, there are 17% higher odds of a racial/ethnic transition, whereas the odds are increased 20% to 40% for residents who perceive more crime. Furthermore, these transitions are more likely to be away from White residents and towards Black or Latino residents. The effect is particularly strong when the prior residents report that crime is such a problem that they wish to move, as the odds that the new residents will be White are reduced 46% and the odds that the new residents will be Latino or Black are increased 39% and 93%, respectively. Social disorder and crime do not differentiate between whether the new residents will be Asian or White.

Conclusion

This study has focused on housing unit transitions, and the likelihood that they will result in social distance between the new and the prior residents based on various socio-demographic

characteristics. As we have highlighted, transitions in which there is social distance are an important source of neighborhood change, and we have therefore chosen to focus explicitly on them. We were particularly interested in how the characteristics of the household, housing unit, or neighborhood can systematically change the possibility that such transitions will result in differences between the new and the prior residents. We focused explicitly on the age of the housing unit and the type of housing unit, and showed that these impacted the amount of social distance occurring between new and prior residents. Furthermore, high social distance transitions are particularly likely to occur when long-term residents move out, whereas crime and disorder fosters demographic change in a specific direction. These findings have implications for studies focusing on net change across aggregated neighborhoods units, and can be informative for future simulation studies. We next highlight four key findings.

A first key finding was that the type of housing unit impacted the social distance observed between the new and the prior residents. Whereas detached single family units are quite prevalent across the landscape of the U.S., they often operated differently than other types of units during such housing unit transitions. Transitions that occurred among detached single family housing units tended to have more social distance between the new and prior residents based on age and household income compared to units in large apartment complexes; the new residents in detached SFUs tended to be younger, but with higher income than the prior residents. An interesting feature is that the change in age of new residents in small apartment complexes behaved completely differently than large apartment complexes, as small complexes tended to receive younger residents than detached SFUs whereas larger complexes tended to receive older residents. Likewise, the difference between small and large apartment complexes regarding the social distance in income of new and prior residents was typically as large as the

difference between large complexes and detached SFUs, implying that there are important differences between apartment transitions depending on the type of structure it is in. Scholars have typically not focused as closely on the distinction between large and small apartment complexes, but there is reason to expect such differences given that larger complexes appear to systematically appeal to a specific clientele with possibly different future mobility intentions. Furthermore, there were notable differences between mobile homes and other types of housing, as their new residents tended to be older with lower household income and education levels; there were also notable racial differences as whites and Latinos were much more likely to move into a mobile home compared to Blacks or Asians. Whereas prior work suggests that mobile homes differ in particular ways from other types of housing with specific consequences for neighborhoods characteristics such as crime levels (Barthe, Leone, and Stitt 2014; McCarty and Hepworth 2013), the results of this study highlight that mobile homes can play an important role in how neighborhoods change, as well. Thus, the housing stock of a neighborhood may well have long-term consequences for how the neighborhood changes.

Second, older housing units were more likely to experience greater social distance during housing unit transitions, as hypothesized. During transitions, there was more social distance based on age, income, and homeownership in older units, even controlling for the other variables in the model. Furthermore, this change was generally in a particular direction: new residents tended to be younger, with lower income, and more likely to be renters. These results are all consistent with filtering theory (Hoyt 1933; Lowry 1960) in that aging housing is less appealing to new residents. There was also evidence that the newest and the oldest housing tended to have in-movers with the highest level of education. This split may indicate that units experiencing a slow decline in quality based on age of the unit will tend to have new residents with lower

education levels than the prior residents, but that some of these units might appear ripe for revitalization and therefore attract more highly educated residents during a transition. Although there was considerable social distance between new and prior residents in older housing based on some dimensions, interestingly, there was *less* social distance based on race/ethnicity compared to newer units. Nonetheless, the age of housing had a direct effect on the likelihood that the new residents were of a particular race/ethnicity, as white households were mostly likely to move into the newest *or* the oldest housing, whereas Blacks and Latinos were the opposite. This nonlinearity for white residents is consistent with some of the recent gentrification patterns occurring in which White residents are more likely to move into older housing with "good bones" in older parts of a region. Asians exhibited a distinct pattern in which they were more likely to move into newer housing, and particularly unlikely to move into older housing, exhibiting a pattern quite distinct from White households that is presumably a reflection of different preferences.

Third, the length of residence of exiting residents had a strong effect on the level of social distance observed during transitions. When longer term residents moved out, there tended to be more social distance based on age, income, education, and race/ethnicity. Thus, when long-term residents exit a housing unit, there appears to be the greatest opportunity for socio-demographic change to occur. This is a pattern that has not been highlighted in prior literature, but implies that these are particularly important transitions for the possible change at the neighborhood level. The new residents in such transitions tended to be much younger, and tended to have higher household income and education level if the prior residents had lived for quite a long period of time in the unit. However, the new residents were less likely to be White, and more likely to be Black, Latino, or Asian when long-term residents moved out. This highlights an interesting

dichotomy: on the one hand, there is a literature positing that neighborhoods with more residential stability (long-term residents) have more cohesion and attachment (Sampson 1988; Wickes, Hipp, Sargeant, and Homel 2013; Williams and Hipp 2019) and therefore less crime due to this cohesiveness (Hipp 2016; Morenoff, Sampson, and Raudenbush 2001; Sampson, Raudenbush, and Earls 1997); on the other hand, our results imply that such neighborhoods have the most potential for change if and when these households decide to move. Although such long-term residents are less likely to move (Crowder 2001), these findings nonetheless imply an important latent potential for neighborhood change that has not been considered in the neighborhood change literature.

Consistent with prior research finding that crime and disorder can impact neighborhood change (Hipp 2010a; Hipp, Tita, and Greenbaum 2009; Markowitz, Bellair, Liska, and Liu 2001), we found that perceived crime and social disorder impacted transitions. There was some evidence that the social distance of transitions was higher in neighborhoods with more social disorder and crime. The evidence was much stronger that crime and disorder impact the types of people who move into units: the new residents in units in neighborhoods with more crime or social disorder were less likely to be white and more likely to be Black or Latino. These race effects mirror the literature. However, we also found that crime and disorder are important for other changes, as the new residents tended to have less income and education, be younger, and be more likely to be renters rather than owners. Incorporating the information on such changes into model of neighborhood change and crime will be an important direction for future research.

An important implication of our findings is that they can be used to inform household-based simulations of how neighborhoods change (Bruch 2014; Bruch and Mare 2012). As we highlighted earlier, neighborhood change may not be as linear as presumed in existing

neighborhood-level studies that focus on net change. Combining information from the large body of research on the disproportionate tendency of residential mobility by some households with the results here about the likelihood of such mobility to bring about change in household level characteristics could result in a bottom-up model of neighborhood change. Such a household level simulation would not necessarily linearly sum to net neighborhood change, but rather provide unexpected insights. This study's findings imply that future studies should test the extent to which housing unit type, housing unit age, and length of residence impact the odds of observation greater levels of net change along various demographic dimensions. This study's findings provide a micro-mechanism that could explain such possible net change. A household-level simulation based on these results could forecast which neighborhoods were more likely to experience demographic change, and what type of demographic change that might entail.

There are also policy implications of our findings. The forecasts that are built on the information provided by such simulations of neighborhood change could allow policymakers to anticipate such changes and allocate resources in anticipation. For example, such anticipated changes might guide the placement of new associations that provide resources to community residents based on the expected needs of new residents. As another example, police agencies might consider allocating resources to neighborhoods in which certain types of neighborhoods are anticipated to occur.

We acknowledge some limitations of this study. First, we only focused on socio-demographic change based on a few dimensions. Although this was a broader range of dimensions compared to most existing research, it nonetheless was a limited range of measures compared to what is possible to consider. Second, we lacked information on the social network ties among residents, which some have posited are important for mobility decisions (Landale and

Guest 1985), and may therefore impact the social distance of such transitions. Third, we did not have information on various neighborhood characteristics that might also impact the amount of social distance that occurs during such transitions. Such data is difficult to obtain; nonetheless, we highlight that existing studies looking at racial transitions have not found that neighborhood-level measures substantively change the household-level coefficients (Hipp 2012; Rosenbaum and Argeros 2005). Furthermore, we did take into account the level of social disorder and crime in the neighborhood based on resident reports, and prior research finds that residents can do a reasonable job of reporting on the level of disorder (Sampson and Raudenbush 2004) or crime (Hipp 2013) in the neighborhood. Nonetheless, future research incorporating more extensive measures of the neighborhood would be useful to be certain that these results for household and housing unit characteristics are robust. It was outside the scope of this study to assess whether these processes have changed over this long period of time. We did estimate ancillary models that assessed whether including interactions of a variable for year with all variables in the model improved the model fit (effectively a Chow Test), and there was no such evidence based on the Bayesian Information Criterion (BIC). Nonetheless, future work focusing on change in specific measures over time may be useful to pursue.

A final point to consider is that this study focused on neighborhood change that occurs through residential mobility. However, there are other processes that also can produce neighborhood change: 1) commercial or industrial structures such as lofts can be converted to residential units or demolished; 2) residential structures can be converted to commercial or industrial uses, or demolished; 3) existing housing units can be combined; 4) existing housing units can be subdivided; and 5) vacant land can be developed. Although the present study ignored these other processes, how frequent are they? To address this, I constructed a dataset of

all census tracts in the U.S. 1990 and 2000 (the heart of the study period). As one way to assess the relative frequency of residential units disappearing, I computed the correlation between the number of units built 0-10 years ago in 1990 with the number of units built 10-20 years ago in 2000 (under the presumption these would be the same units): this correlation among all tracts in the U.S. was .93. The correlations for units 10-20, 20-30, 30-40, 40-50, and 50-60 years old in 1990 with the corresponding values in 2000 was .92, .92, .94, .91, and .97, respectively. To assess how frequently units are transformed to different usage, I computed the correlation between the number of detached single family units in a tract in 1990 with the value in 2000, and the correlation was .90. There were similarly high correlations for attached single family units (.89), duplexes (.95), 3-4 unit buildings (.91); 5-9 unit buildings (.88), 10-19 unit buildings (.90), 20-49 unit buildings (.93), 50+ unit buildings (.97), and mobile homes (.88). Thus, while the approach adopted in the present study ignored neighborhood change that occurs through these other processes, it nonetheless appears that the majority of neighborhood change occurs through residential mobility. Nonetheless, it would be useful for future research to assess whether these other types of change have consequences for some neighborhoods.

In conclusion, this study has focused at the micro level of housing unit transitions, and their consequences for how neighborhoods change based on socio-demographic characteristics. The results have highlighted that characteristics of the housing unit—both the type of housing unit, as well as its age—impact how much social distance occurs during a transition. This implies that researchers exploring net change in neighborhoods will want to assess if these micro housing unit characteristics give rise to specific changes at the neighborhood level. We believe future researchers can use this information to build micro household-level models predicting mobility out of neighborhoods and the likelihood of that leading to socio-demographic change,

and then assessing how well such micro models can explain actual neighborhood change. Relatedly, we observed that the level of crime and social disorder drives change in the characteristics of residents during transitions, beyond just racial turnover. Furthermore, an interesting finding was that when long-term residents move there is the greatest potential for social distance between the new and the prior residents, implying that there is a latent potential for considerable change in neighborhoods that are typically considered to have the highest level of residential stability. This may imply a nonlinear possibility for neighborhood change in such instances, which is a possibility that may be revealed in future simulation studies based on these results, and needs further study.

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Tables and Figures

Table 1. Summary statistics of demographic measures for all households in AHS from 1983 to 2004, by housing unit type

	Detached single family unit		Attached single family unit		Duplex		3-4 units		5-9 units		10-19 units		20-49 units		50+ units		Mobile home	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Age	49.0	15.5	45.4	16.9	44.3	17.9	42.0	17.4	40.4	17.1	39.6	17.0	44.8	20.6	55.4	21.3	53.7	18.8
Black	8.3%		15.2%		17.2%		15.3%		17.7%		15.6%		12.4%		14.1%		2.1%	
Latino	6.9%		9.4%		8.7%		12.6%		11.0%		11.0%		10.9%		9.1%		6.0%	
Asian	3.3%		5.7%		3.2%		5.3%		5.2%		5.7%		5.3%		5.0%		1.0%	
Logged household income	3.70	0.88	3.40	0.92	3.07	0.88	3.02	0.89	3.06	0.88	3.06	0.86	2.96	0.89	2.87	0.96	3.03	0.79
Education	13.41	3.06	13.32	3.06	12.39	3.17	12.56	3.20	13.00	3.06	13.13	2.97	13.11	3.13	12.75	3.51	11.73	2.49
Owner	87.0%		50.6%		26.4%		13.5%		9.9%		6.9%		9.3%		15.4%		86.7%	
Number of persons in HH	2.93	1.47	2.43	1.39	2.43	1.43	2.29	1.41	2.13	1.27	1.95	1.14	1.75	1.07	1.56	0.93	2.21	1.26
Length of residence	12.2	12.3	6.3	8.7	8.0	11.7	4.7	7.6	3.4	5.4	3.0	4.7	3.7	5.4	5.3	6.2	7.5	7.2
Social disorder	11.2%		13.9%		16.4%		16.6%		16.1%		15.9%		14.3%		12.1%		15.7%	
Crime - none	79.3%		75.4%		71.3%		68.8%		67.8%		69.0%		67.6%		66.8%		81.8%	
Crime - bothersome	6.6%		7.9%		8.8%		9.2%		9.9%		9.1%		11.2%		12.9%		6.7%	
Crime - problem	10.1%		9.5%		10.3%		10.9%		11.3%		11.3%		11.7%		12.0%		6.4%	
Crime - want to move	4.1%		7.3%		9.7%		11.1%		11.0%		10.6%		9.5%		8.3%		5.2%	
Number of households	173,767		18,409		15,384		14,366		16,261		15,718		11,149		7,187		5,955	

Table 2. Summary statistics of variables used in analyses

	(A)			(B)	
	Units that experienced a turnover			All units	
	Mean	SD		Mean	SD
Dependent variables					
Social distance of age	13.88	12.90		10.17	10.34
Difference in age	-3.04	18.70		1.78	14.40
Social distance in household income	0.78	0.76		0.69	0.73
Difference in household income	0.13	1.08		0.11	1.00
Social distance in education	2.45	2.44		1.50	2.22
Difference in education	0.15	3.45		0.12	2.67
Social distance in owner	0.15	0.35		0.09	0.29
Difference in owner	-0.04	0.38		0.00	0.31
Social distance in race	0.30	0.46		0.15	0.36
New resident is Asian	0.06	0.24		0.05	0.21
New resident is Black	0.14	0.35		0.13	0.34
New resident is Latino	0.14	0.35		0.10	0.30
New resident is White	0.65	0.48		0.72	0.45
Independent variables					
Age	41.89	17.24		46.92	17.10
Black	11.8%			12.7%	
Latino	9.8%			8.1%	
Asian	4.4%			4.0%	
Logged household income	3.30	0.93		3.43	0.96
Education	13.19	3.02		13.16	3.09
Owner	38.3%			60.3%	
Number of persons in HH	2.49	1.44		2.60	1.47
Housing unit type					
Detached single family unit	42.2%			59.0%	
Attached single family unit	8.3%			7.2%	
Duplex	7.6%			6.0%	
3-4 units	8.5%			5.5%	
5-9 units	10.5%			6.3%	
10-19 units	10.5%			6.2%	
20-49 units	7.0%			4.4%	
50+ units	3.5%			3.0%	
Mobile home	2.1%			2.5%	

Age of housing					
Unit built in last 2 years	21.7%			17.4%	
Unit built 3-5 years ago	21.0%			18.8%	
Unit built 6-10 years ago	18.9%			19.6%	
Unit built 11-20 years ago	11.2%			12.7%	
Unit built 21-30 years ago	8.6%			10.3%	
Unit built 31-40 years ago	7.4%			8.2%	
Unit built 41 or more years ago	11.2%			13.0%	
Length of residence					
Residence less than 2 years	43.8%			26.6%	
Residence 2-5 years	29.8%			27.6%	
Residence 6-10 years	11.8%			15.8%	
Residence 11-20 years	7.9%			15.1%	
Residence 21-30 years	3.3%			7.9%	
Residence 31+ years	3.4%			7.0%	
Perception of crime and social disorder					
Crime - none	73.7%			75.0%	
Crime - bothersome	7.9%			7.9%	
Crime - problem	9.9%			10.3%	
Crime - want to move	8.5%			6.8%	
Social disorder	14.5%			12.7%	
Number of households	114,424			546,497	

Table 3. Models predicting demographic change in households

	(1) Social distance of age		(2) Difference in age		(3) Social distance of owners		(4) Difference in owners	
Type of housing unit. Ref: Detached single family unit								
Attached single family unit	0.270	*	0.055		-0.073	*	-0.158	**
	(2.06)		(0.34)		-(2.25)		-(39.42)	
Duplex	0.430	**	-0.754	**	-0.224	**	-0.222	**
	(3.05)		-(4.30)		-(6.04)		-(51.28)	
3-4 units	0.275	*	-0.756	**	-0.981	**	-0.246	**
	(2.02)		-(4.47)		-(21.89)		-(58.92)	
5-9 units	0.354	**	-1.449	**	-1.316	**	-0.257	**
	(2.73)		-(8.99)		-(27.54)		-(64.61)	
10-19 units	0.346	**	-1.923	**	-1.551	**	-0.273	**
	(2.60)		-(11.65)		-(29.09)		-(67.16)	
20-49 units	-1.012	**	0.089		-1.340	**	-0.276	**
	-(6.69)		(0.47)		-(22.94)		-(59.60)	
50+ units	-3.808	**	4.941	**	-1.037	**	-0.268	**
	-(19.01)		(19.88)		-(14.54)		-(43.63)	
Mobile home	-0.946	**	3.154	**	-0.144	**	0.042	**
	-(4.08)		(10.98)		-(2.62)		(5.99)	
Age of housing unit. Ref: built in last 2 years								
Unit built 3-5 years ago	0.537	**	-0.394	**	0.179	**	-0.027	**
	(5.29)		-(3.13)		(6.03)		-(8.62)	
Unit built 6-10 years ago	0.740	**	-0.638	**	0.160	**	-0.045	**
	(6.98)		-(4.85)		(5.19)		-(13.95)	
Unit built 11-20 years ago	0.970	**	-1.198	**	0.195	**	-0.057	**
	(7.78)		-(7.74)		(5.67)		-(14.82)	
Unit built 21-30 years ago	0.839	**	-1.449	**	0.279	**	-0.077	**
	(6.06)		-(8.45)		(7.53)		-(18.10)	
Unit built 31-40 years ago	1.167	**	-1.776	**	0.481	**	-0.104	**
	(7.95)		-(9.75)		(12.44)		-(23.07)	
Unit built 41 or more years ago	1.110	**	-2.567	**	0.658	**	-0.093	**
	(8.25)		-(15.38)		(18.47)		-(22.49)	

Length of residence in unit. Ref: Resident 0-1 years												
Residence 2-5 years	0.449	**		-0.486	**		0.104	**		-0.011	**	
	(5.71)			-(4.98)			(4.60)			-(4.62)		
Residence 6-10 years	0.660	**		-1.247	**		0.005			-0.004		
	(5.81)			-(8.85)			(0.17)			-(1.19)		
Residence 11-20 years	1.732	**		-2.638	**		0.040			-0.015	**	
	(12.24)			-(15.02)			(1.11)			-(3.49)		
Residence 21-30 years	4.792	**		-5.615	**		0.080			-0.009		
	(23.45)			-(22.15)			(1.63)			-(1.45)		
Residence 31+ years	7.929	**		-9.397	**		0.211	**		-0.033	**	
	(35.88)			-(34.28)			(4.09)			-(4.94)		
Household demographics												
Age	-0.481	**		-0.963	**		0.002			0.001	**	
	-(43.18)			-(69.61)			(0.65)			(4.36)		
Age squared	0.0079	**		0.0025	**		0.0000			0.0000		
	(71.11)			(17.79)			-(0.69)			-(1.70)		
Black	-0.069			0.170			0.082	**		-0.043	**	
	-(0.65)			(1.29)			(2.69)			-(13.05)		
Latino	-0.051			-0.469	**		0.013			-0.020	**	
	-(0.42)			-(3.11)			(0.39)			-(5.48)		
Asian	0.352	*		-0.618	**		0.079			-0.028	**	
	(2.17)			-(3.07)			(1.74)			-(5.70)		
Household income	0.309	*		-1.137	**		0.275	**		-0.023	**	
	(2.26)			-(6.69)			(6.82)			-(5.54)		
Household income squared	-0.059	*		0.232	**		-0.048	**		0.007	**	
	-(2.50)			(8.00)			-(7.26)			(10.35)		
Education	-0.033			0.135	*		0.012			0.005	**	
	-(0.68)			(2.20)			(0.91)			(3.19)		
Education squared	-0.0053	**		-0.0057	*		-0.0012	*		0.0000		
	-(2.69)			-(2.34)			-(2.23)			(0.40)		
Owner	-0.966	**		1.285	**		0.638	**		-0.530	**	
	-(10.06)			(10.78)			(25.80)			-(180.40)		
Number of persons	-0.354	**		-0.016			0.005			0.006	**	
	-(13.66)			-(0.49)			(0.72)			(8.17)		

Social Disorder	0.422	**		-0.463	**		0.051			-0.009	**
	(4.47)			-(3.95)			(1.93)			-(3.27)	
Crime. Ref: no crime											
Crime - bothersome	0.363	**		-0.429	**		-0.030			-0.006	
	(3.03)			-(2.88)			-(0.86)			-(1.69)	
Crime - problem	0.001			-0.323	*		0.129	**		-0.004	
	(0.01)			-(2.38)			(4.36)			-(1.17)	
Crime - want to move	0.149			-0.476	**		-0.023			-0.020	**
	(1.23)			-(3.17)			-(0.64)			-(5.31)	
Intercept	18.273	**		34.734	**		-2.052	**		0.224	**
	(34.32)			(52.58)			-(13.74)			(13.72)	
N	113552			113552			113550			113550	
R-square	0.315			0.498			0.094			0.264	
BIC	861040			910021			86720			69204	
*** p < .01(two-tail test), * p < .05 (two-tail test). T-values in parentheses.*											

Table 4. Models predicting SES change in households

	(1)		(2)		(3)		(4)	
	Social distance of income (logged)		Difference in income (logged)		Social distance in education		Difference in education	
Type of housing unit. Ref: Detached single family unit								
Attached single family unit	0.007		-0.251	**	-0.011		-0.071	*
	(0.88)		-(24.04)		-(0.90)		-(2.14)	
Duplex	-0.004		-0.252	**	0.017		-0.189	**
	-(0.45)		-(22.37)		(1.36)		-(5.28)	
3-4 units	-0.018	*	-0.345	**	0.022		-0.241	**
	-(2.11)		-(31.82)		(1.80)		-(6.98)	
5-9 units	-0.023	**	-0.349	**	0.020		-0.073	*
	-(2.80)		-(33.80)		(1.74)		-(2.22)	
10-19 units	-0.011		-0.372	**	0.046	**	-0.078	*
	-(1.31)		-(35.14)		(3.94)		-(2.33)	
20-49 units	-0.040	**	-0.460	**	0.021		-0.034	
	-(4.23)		-(38.25)		(1.61)		-(0.90)	
50+ units	-0.097	**	-0.536	**	0.016		-0.107	*
	-(7.83)		-(33.62)		(0.90)		-(2.12)	
Mobile home	0.002		-0.503	**	-0.105	**	-1.199	**
	(0.14)		-(27.26)		-(5.00)		-(20.46)	
Age of housing unit. Ref: built in last 2 years								
Unit built 3-5 years ago	0.009		-0.084	**	0.035	**	-0.218	**
	(1.44)		-(10.45)		(3.85)		-(8.48)	
Unit built 6-10 years ago	0.026	**	-0.158	**	0.023	*	-0.356	**
	(3.95)		-(18.71)		(2.44)		-(13.26)	
Unit built 11-20 years ago	0.029	**	-0.212	**	0.035	**	-0.462	**
	(3.71)		-(21.29)		(3.16)		-(14.64)	
Unit built 21-30 years ago	0.030	**	-0.274	**	0.025	*	-0.389	**
	(3.54)		-(24.85)		(2.07)		-(11.13)	
Unit built 31-40 years ago	0.041	**	-0.282	**	0.024		-0.343	**
	(4.48)		-(24.15)		(1.85)		-(9.24)	
Unit built 41 or more years ago	0.055	**	-0.255	**	-0.004		-0.258	**
	(6.64)		-(23.82)		-(0.33)		-(7.57)	

Length of residence in unit. Ref: Resident 0-1 years											
Residence 2-5 years	-0.005			-0.026	**		0.099	**		-0.066	**
	-(0.95)			-(4.07)			(14.04)			-(3.32)	
Residence 6-10 years	-0.004			-0.037	**		0.137	**		-0.100	**
	-(0.60)			-(4.10)			(13.60)			-(3.47)	
Residence 11-20 years	0.038	**		-0.003			0.151	**		-0.042	
	(4.37)			-(0.26)			(12.19)			-(1.18)	
Residence 21-30 years	0.114	**		0.082	**		0.179	**		0.102	*
	(9.02)			(5.05)			(10.10)			(1.98)	
Residence 31+ years	0.220	**		0.168	**		0.217	**		0.192	**
	(16.02)			(9.53)			(11.48)			(3.43)	
Household demographics											
Age	0.000			0.004	**		-0.002			-0.017	**
	-(0.63)			(4.70)			-(1.88)			-(5.99)	
Age squared	0.0000			0.0000	**		0.0000	**		0.0002	**
	(1.70)			-(5.21)			(4.99)			(6.03)	
Black	-0.040	**		-0.329	**		-0.026	**		-0.590	**
	-(6.12)			-(38.84)			-(2.74)			-(21.91)	
Latino	-0.004			-0.120	**		0.089	**		-0.935	**
	-(0.51)			-(12.35)			(8.53)			-(30.39)	
Asian	0.029	**		-0.121	**		0.071	**		-0.240	**
	(2.93)			-(9.36)			(5.11)			-(5.84)	
Household income (logged)	-1.223	**		-1.020	**		0.036	**		-0.354	**
	-(143.93)			-(93.53)			(3.01)			-(10.21)	
Household income (logged) squar	0.158	**		0.034	**		-0.008	**		0.121	**
	(108.56)			(18.02)			-(4.03)			(20.43)	
Education	0.025	**		0.009	*		-0.363	**		-0.877	**
	(8.05)			(2.42)			-(88.26)			-(70.27)	
Education squared	-0.0006	**		0.0010	**		0.0141	**		0.0044	**
	-(5.32)			(6.42)			(85.30)			(8.79)	
Owner	-0.011			0.227	**		-0.086	**		0.373	**
	-(1.80)			(29.70)			-(10.06)			(15.36)	
Number of persons	-0.001			0.012	**		0.002			-0.130	**
	-(0.37)			(5.66)			(0.71)			-(19.81)	

Social Disorder	-0.014	*		-0.059	**		0.015			-0.251	**
	-(2.31)			-(7.87)			(1.81)			-(10.51)	
Crime. Ref: no crime											
Crime - bothersome	-0.002			-0.062	**		-0.004			-0.093	**
	-(0.33)			-(6.48)			-(0.39)			-(3.05)	
Crime - problem	-0.005			-0.008			-0.009			0.020	
	-(0.74)			-(0.95)			-(0.96)			(0.73)	
Crime - want to move	-0.004			-0.139	**		0.035	**		-0.441	**
	-(0.57)			-(14.42)			(3.27)			-(14.42)	
Intercept	2.712	**		3.088	**		2.943	**		11.876	**
	(82.13)			(72.83)			(64.27)			(88.14)	
N	113521			113521			113550			113550	
R-square	0.243			0.383			0.029			0.388	
BIC	229491.9			286271			455241			548926	
*** p < .01(two-tail test), * p < .05 (two-tail test). T-values in parentheses.*											

Table 5. Models predicting racial/ethnic change in households

	(1)		(2)		(3)		(4)		(5)	
	Social distance of race		New residents are white		New residents are black		New residents are Latino		New residents are Asian	
Type of housing unit. Ref: Detached single family unit										
Attached single family unit	0.172	**	-0.289	**	0.348	**	0.097	*	0.090	
	(5.88)		-(9.53)		(8.33)		(2.37)		(1.67)	
Duplex	0.128	**	-0.314	**	0.358	**	0.174	**	0.056	
	(3.98)		-(9.68)		(8.27)		(3.98)		(0.87)	
3-4 units	0.341	**	-0.432	**	0.360	**	0.275	**	0.268	**
	(11.52)		-(13.99)		(8.43)		(7.01)		(4.97)	
5-9 units	0.391	**	-0.520	**	0.435	**	0.303	**	0.344	**
	(14.02)		-(17.71)		(10.82)		(8.02)		(6.78)	
10-19 units	0.528	**	-0.563	**	0.501	**	0.298	**	0.406	**
	(18.58)		-(18.76)		(12.12)		(7.69)		(7.90)	
20-49 units	0.457	**	-0.427	**	0.404	**	0.167	**	0.338	**
	(14.13)		-(12.48)		(8.37)		(3.78)		(5.82)	
50+ units	0.419	**	-0.437	**	0.369	**	0.172	**	0.373	**
	(9.59)		-(9.49)		(6.02)		(2.80)		(4.68)	
Mobile home	-0.169	**	0.323	**	-1.430	**	0.260	**	-0.424	**
	-(2.97)		(5.52)		-(9.80)		(3.81)		-(3.58)	
Age of housing unit. Ref: built in last 2 years										
Unit built 3-5 years ago	0.050	*	-0.140	**	0.068	*	0.206	**	0.005	
	(2.24)		-(5.90)		(1.98)		(6.38)		(0.12)	
Unit built 6-10 years ago	0.046	*	-0.255	**	0.137	**	0.296	**	0.073	
	(1.97)		-(10.39)		(3.85)		(9.07)		(1.77)	
Unit built 11-20 years ago	0.023		-0.349	**	0.128	**	0.486	**	0.020	
	(0.84)		-(12.08)		(3.14)		(12.91)		(0.40)	
Unit built 21-30 years ago	-0.048		-0.405	**	0.199	**	0.557	**	-0.185	**
	-(1.55)		-(12.71)		(4.52)		(13.38)		-(3.14)	
Unit built 31-40 years ago	-0.089	**	-0.323	**	0.106	*	0.549	**	-0.308	**
	-(2.67)		-(9.43)		(2.28)		(11.95)		-(4.49)	
Unit built 41 or more years ago	-0.053		-0.221	**	0.040		0.501	**	-0.332	**
	-(1.73)		-(6.95)		(0.90)		(11.33)		-(5.33)	

Length of residence in unit. Ref: Resident 0-1 years															
Residence 2-5 years	0.063	**		-0.037	*		0.022			0.048	*		-0.035		
	(3.62)			-(2.03)			(0.87)			(2.03)			-(1.11)		
Residence 6-10 years	0.113	**		-0.056	*		0.064			0.054			-0.027		
	(4.42)			-(2.10)			(1.73)			(1.52)			-(0.58)		
Residence 11-20 years	0.190	**		-0.149	**		0.223	**		0.064			-0.018		
	(5.90)			-(4.53)			(4.90)			(1.44)			-(0.30)		
Residence 21-30 years	0.427	**		-0.271	**		0.251	**		0.244	**		0.200	*	
	(9.21)			-(5.71)			(3.79)			(3.77)			(2.29)		
Residence 31+ years	0.572	**		-0.338	**		0.336	**		0.288	**		0.145		
	(11.36)			-(6.56)			(4.72)			(4.07)			(1.39)		
Household demographics															
Age	0.001			-0.019	**		0.009	**		0.016	**		0.013	**	
	(0.56)			-(7.19)			(2.66)			(4.81)			(2.73)		
Age squared	-0.0001	**		0.0003	**		-0.0001	**		-0.0002	**		-0.0002	**	
	-(3.44)			(9.87)			-(3.42)			-(7.11)			-(3.68)		
Black	0.577	**		-2.127	**		2.475	**		-0.082	*		-0.024		
	(26.33)			-(87.97)			(101.68)			-(2.45)			-(0.50)		
Latino	1.111	**		-1.118	**		0.145	**		1.298	**		-0.053		
	(44.52)			-(43.93)			(3.56)			(48.96)			-(1.23)		
Asian	1.845	**		-1.107	**		0.460	**		0.018			1.340	**	
	(51.02)			-(32.12)			(8.58)			(0.43)			(33.17)		
Household income	0.108	**		-0.060			0.019			0.238	**		-0.016		
	(3.62)			-(1.92)			(0.46)			(5.74)			-(0.30)		
Household income squared	-0.026	**		0.049	**		-0.037	**		-0.071	**		-0.014		
	-(4.95)			(9.03)			-(4.77)			-(9.74)			-(1.46)		
Education	0.078	**		0.116	**		0.046	**		-0.077	**		-0.083	**	
	(7.22)			(9.87)			(2.98)			-(5.98)			-(4.79)		
Education squared	-0.003	**		-0.002	**		-0.003	**		0.000			0.004	**	
	-(6.79)			-(4.33)			-(5.50)			(0.06)			(5.39)		
Owner	-0.239	**		0.077	**		-0.137	**		-0.053			0.028		
	-(11.00)			(3.47)			-(4.21)			-(1.80)			(0.71)		
Number of persons	-0.007			-0.119	**		0.050	**		0.097	**		0.092	**	
	-(1.28)			-(19.85)			(6.20)			(13.25)			(9.43)		

Social Disorder	0.158	**		-0.152	**		0.169	**		0.145	**		-0.041	
	(7.74)			-(7.13)			(5.87)			(5.22)			-(1.05)	
Crime. Ref: no crime														
Crime - bothersome	0.176	**		-0.277	**		0.312	**		0.183	**		0.033	
	(6.86)			-(10.32)			(8.67)			(5.24)			(0.67)	
Crime - problem	0.200	**		-0.272	**		0.377	**		0.114	**		0.061	
	(8.47)			-(11.10)			(11.24)			(3.50)			(1.40)	
Crime - want to move	0.331	**		-0.612	**		0.655	**		0.318	**		0.035	
	(13.13)			-(23.03)			(19.59)			(9.73)			(0.74)	
Intercept	-2.053	**		0.843	**		-4.807	**		-1.999	**		-2.893	**
	-(17.63)			(6.92)			-(24.98)			-(13.63)			-(14.01)	
N	113531			113531			113531			113531			113531	
R-square	0.120			0.223			0.286			0.223			0.171	
BIC	122859.5			115123.7			67843.2			73033.0			45514.9	
*** p < .01(two-tail test), * p < .05 (two-tail test). T-values in parentheses.*														

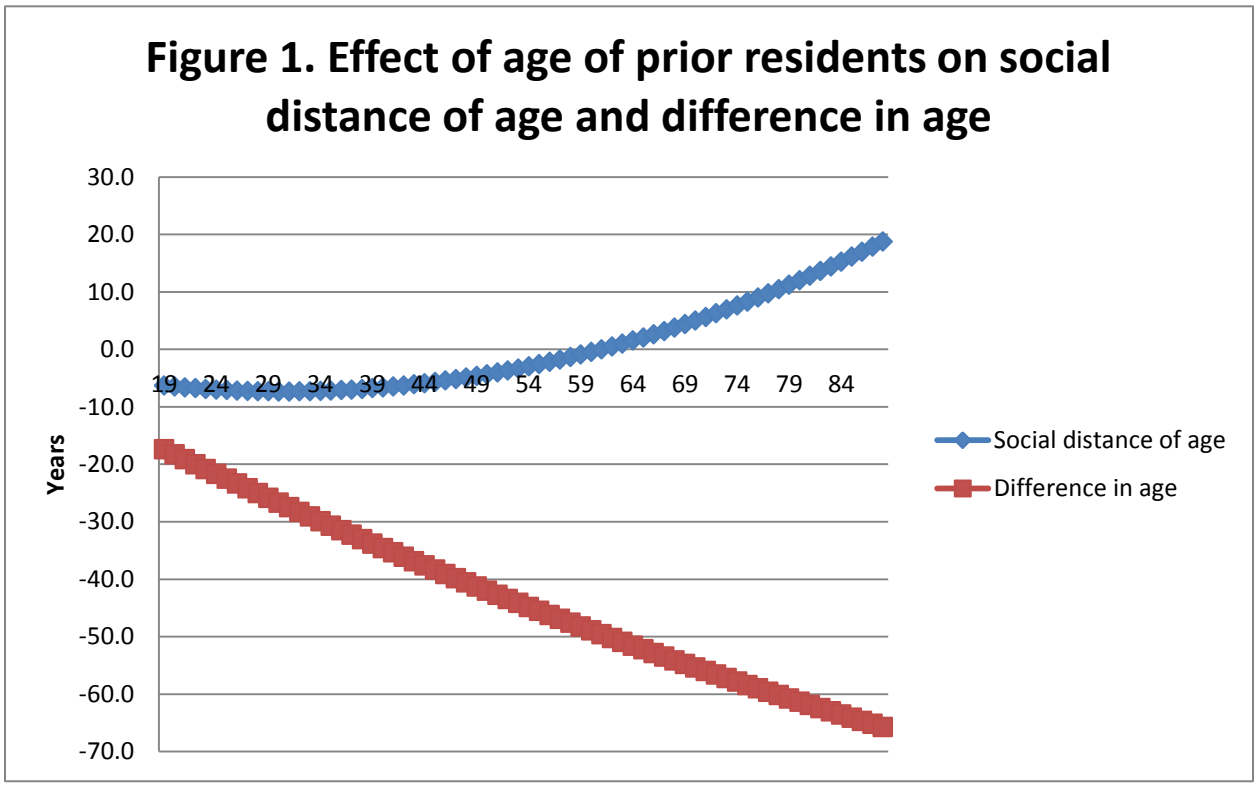
Figure 1. Effect of age of prior residents on social distance of age and difference in age
30.0
20.0
10.0
0.0
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
Years
19 24 29 34 39 44 49 54 59 64 69 74 79 84
Social distance of age
Difference in age